

1350.2900 GROUND ANCHORS.

Subpart 1. **Placement and purpose.** Ground anchors, including means for attaching ties, shall be located to effectively match the anchoring system instructions provided by the manufactured home manufacturer, or, if there are no instructions, according to part 1350.2600, and shall be designed and installed to transfer the anchoring loads to the ground.

Subp. 2. **Capacity of anchors.** Each ground anchor, when installed, shall be capable of resisting an allowable working load at least equal to 3,150 pounds in the direction of the tie plus a 50 percent overload (4,725 pounds total) without failure. Failure shall be considered to have occurred when the point of connection between the tie and anchor moves more than two inches at 4,725 pounds in the direction of the vertical tie when the anchoring equipment is installed in accordance with the manufacturer's instructions. Those ground anchors which are designed to be installed so that the loads on the anchor are other than direct withdrawal shall be designed and installed to resist an applied design load of 3,150 pounds at 45 degrees from horizontal without displacing the anchor more than four inches horizontally at the point where the tie attaches to the anchor. Anchors designed for connection of multiple ties shall be capable of resisting the combined working load and overload consistent with the intent expressed herein.

Subp. 3. **Anchor design and installation.** Each manufactured ground anchor shall be approved pursuant to part 1350.1500 and installed in accordance with the anchor manufacturer's instructions and shall include means of attachment of ties meeting the requirements of part 1350.2800, subpart 5. Ground anchor manufacturer's installation instructions shall include the amount of preload required, the methods of adjustment after installation, and the load capacity in various types of soils. These instructions shall include tensioning adjustments which may be needed to prevent damage to the manufactured home, particularly damage that can be caused by frost heave.

Subp. 4. **Information on ground anchor.** Each ground anchor shall have the manufacturer's identification and listed model identification number marked so that the number is visible after installation. Instructions shall accompany each listed ground anchor specifying the types of soil for which the anchor is suitable under the requirements of subpart 2.

Subp. 5. **Table of soil types.** For determination of soil types for anchors and soil bearing capacities, refer to the table in Code of Federal Regulations, title 24, part 3285.202, which is included in this part.

Table to Part 3285.202			
Soil classification			

Classification number	ASTM D 2847-00 or D 2488-00 (incorporated by reference, see Part 3285.4)	Soil description	Allowable soil bearing pressure (psf) ¹	Blow count ASTM D 1586-99	Torque probe ³ value ⁴ (inch-pounds)
1		Rock or hard pan	4000+		
2	GW, GP, SW, SP, GM, SM	Sandy gravel and gravel; very dense and/or cemented sands; coarse gravel/cobbles; preloaded silts, clays and coral	2000	40+	More than 550
3	GC, SC, ML, CL	Sand; silty sand; clayey sand; silty gravel; medium dense coarse sands; sandy gravel; and very stiff silt, sand clays	1500	24-39	351-550
4A	CG, MH ²	Loose to medium dense sands; firm to stiff clays and silts; alluvial fills	1000	18-23	276-350
4B	CH, MH ²	Loose sands; firm clays; alluvial fills	1000	12-17	175-275
5	OL, OH, PT	Uncompacted fill; peat; organic clays	Refer to Part 3285.202(e)	0-11	Less than 175

Notes:

¹ The values provided in this table have not been adjusted for overburden pressure, embedment depth, water table height, or settlement problems.

² For soils classified as CH or MH, without either torque or probe values or blow count test results, selected anchors must be rated for a 4B soil.

³ The torque test probe is a device for measuring the torque value of soils to assist in evaluating the holding capacity of the soil in which the ground anchor is placed. The shaft must be of suitable length for the full depth of the ground anchor.

⁴ The torque value is a measure of the load resistance provided by the soil when subject to the turning or twisting force of the probe.

Subp. 6. **Use of concrete slabs or continuous footings.** Concrete slabs, piers, or continuous footings that transfer anchor loads to the ground must be constructed and installed according to the anchor manufacturer's instructions or with engineered designs. The anchor loads pertaining to the slabs, piers, or footings shall comply with subpart 2.

Subp. 7. **Other anchoring devices.** Other anchoring devices meeting the requirements of this part shall be permitted if approved prior to installation by the authority having jurisdiction.

Statutory Authority: *MS s 326B.02; 326B.101; 326B.106; 326B.13; 327.32; 327.33; 327B.01 to 327B.12*

History: *24 SR 1846; 34 SR 866*

Published Electronically: *January 4, 2010*